



Space & Missile Defense Symposium

NASA Panel: Resurgence of Human Space Flight

August 12, 2015

Agenda: Resurgence of Human Space Flight

- **Opening Comments**

- 1960s to Present: Where are we now?
- The Path to Mars
- Human Space Flight Outcomes
- Panel Introductions

- **Space Launch System**

- **Orion Multipurpose Crew Vehicle**

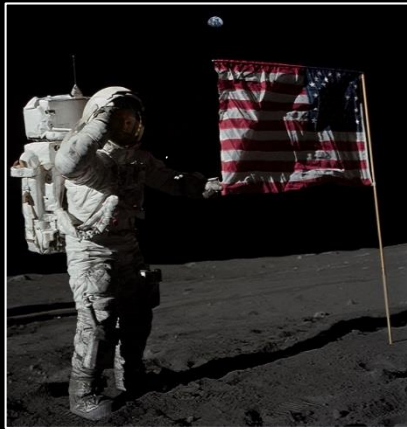
- **Commercial Space Transportation**

- **Orion Launch Abort System**

- **Q & A**

1960s to Present: Where are we now?

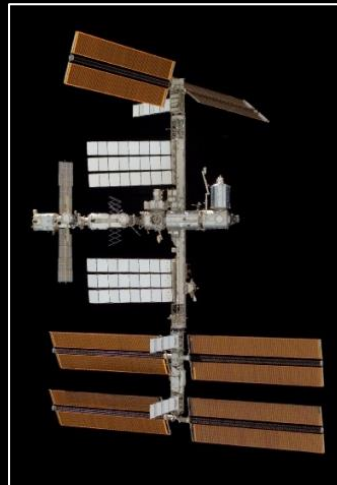
1969



1981-2011



1998-ONGOING



PRESENT



The Path to Mars

HUMAN EXPLORATION

NASA's Path to Mars



EARTH RELIANT

MISSION: 6 TO 12 MONTHS
RETURN TO EARTH: HOURS



Mastering fundamentals
aboard the International
Space Station

U.S. companies
provide access to
low-Earth orbit

PROVING GROUND

MISSION: 1 TO 12 MONTHS
RETURN TO EARTH: DAYS



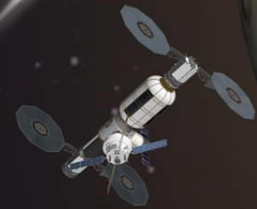
Expanding capabilities by
visiting an asteroid redirected
to a lunar distant retrograde orbit

The next step: traveling beyond low-Earth
orbit with the Space Launch System
rocket and Orion spacecraft



MARS READY

MISSION: 2 TO 3 YEARS
RETURN TO EARTH: MONTHS



Developing planetary independence
by exploring Mars, its moons and
other deep space destinations

Human Space Flight Outcomes



- ✓ Communication Technologies
- ✓ Life Support
- ✓ Materials Research
- ✓ Resource Mining
- ✓ Radiation Protection
- ✓ Power Generation

Panel: Resurgence of Manned Space Flight

Space Launch System

Chris Crumbly, Manager of the Spacecraft Payload Integration & Evolution Office, Space Launch System Office

Orion Multipurpose Crew Vehicle

Paul Marshall, Assistant Manager, Orion Program Office

Commercial Crew, the CST-100 and ISS LEO

Peter McGrath, Director of Business Development for the Boeing Space Exploration Division

Orion Launch Abort System – A Safe Beyond Earth Orbit Future

Larry Price, Deputy PM for LM's Orion program



www.nasa.gov/marshall